

What is claimed is:

1. A method for determining metal-induced sensitivity of a subject, said method comprising:
  - 5 a. Staining a peripheral blood leukocyte (PBL) population obtained from a subject with an intracellular protein stain;
  - b. Contacting said population with an amount of a test metal-containing compound sufficient to stimulate or enhance proliferation of said population; and
  - 10 c. Measuring the loss of intracellular protein staining, whereby loss of intracellular protein staining indicates proliferation and that a subject is sensitive to the test metal.
2. The method of claim 1, wherein the test metal is Beryllium, Titanium, Zirconium, Aluminum, Cobalt or Gold.
- 15 3. The method of claim 1, wherein said subject exhibits symptoms associated with Chronic beryllium disease, Granulomatous Lung Disease, Potroom Asthma, Sarcoidosis-Like Pathology, Noncaseating granulomas, Pulmonary fibrosis, or Hypersensitivity pneumonitis.
- 20 4. The method of claim 1, wherein said intracellular stain is fluorescent agent.
5. The method of claim 4, wherein said intracellular stain is CFSE (carboxy fluorescein diacetate succinimide ester).
6. The method of claim 1, further comprising the step of selecting a subpopulation of said peripheral blood leukocyte population using a cell surface stain.
- 25 7. The method of claim 6, wherein said cell surface marker is CD3, CD4 or a combination thereof.
8. The method of claim 6, wherein said cell surface marker is CD8.
9. The method of claim 6 wherein said surface stain is a fluorescent agent.
10. The method of claim 1, wherein said test metal is a beryllium salt.
- 30 11. The method of claim 10, wherein said beryllium salt is beryllium sulfate, at a concentration of between about 1 to about 150  $\mu$ M.
12. The method of claim 1, wherein said method further comprises comparing the values obtained in step (c) with a standard.

13. The method of claim 1, wherein said measuring of intracellular staining is accomplished with the aid of a CFSE (carboxy fluorescein diacetate succinimide ester).
14. A kit for diagnosing metal-induced sensitivity in a subject, said kit comprising:
  - 5 an agent which selectively labels intracellular proteins, an agent that selectively labels cell surface markers on a subpopulation of cells, at least one test metal, at a concentration sufficient to stimulate or enhance proliferation of a population of cells isolated from a subject with metal-induced sensitivity, and the software to analyze the results.
- 10 15. The kit of claim 14, further comprising a medium for isolating leukocytes from peripheral blood.
16. The kit of claim 14, wherein said agent which selectively labels intracellular proteins is fluorescent.
- 15 17. The kit of claim 16, wherein said agent is CFSE (carboxy fluorescein diacetate succinimide ester).
18. The kit of claim 14, further comprising an agent said agent selectively labels T lymphocyte cell surface markers.
19. The kit of claim 18, wherein said agent selectively labels, CD3, CD4, CD8 or a combination thereof and is fluorescent
- 20 20. The kit of claim 14, wherein at least one test metal is Beryllium, Titanium, Zirconium, Aluminum, Cobalt, Gold or their respective salts
21. The kit of claim 14, wherein the test metal is a beryllium compound.
22. The kit of claim 21, wherein said beryllium compound is a beryllium salt.
23. The kit of claim 14, wherein said beryllium salt is beryllium sulfate.
- 25 24. The kit of claim 23, wherein said beryllium sulfate is formulated such that the final concentration of said beryllium sulfate is between about 1 to about 150  $\mu$ M per sample tested.
25. The kit of claim 14, further comprising at least one standard, obtained from a subject, or pool of subjects, without metal-induced sensitivity
- 30 26. The kit of claim 25, wherein said standard is obtained from a subject, or pool of subjects, without metal-induced sensitivity.

27. The kit of claim 25, further comprising a software package, wherein said software package compares the values obtained, with the test subject to determine sensitivity.